

space complexity

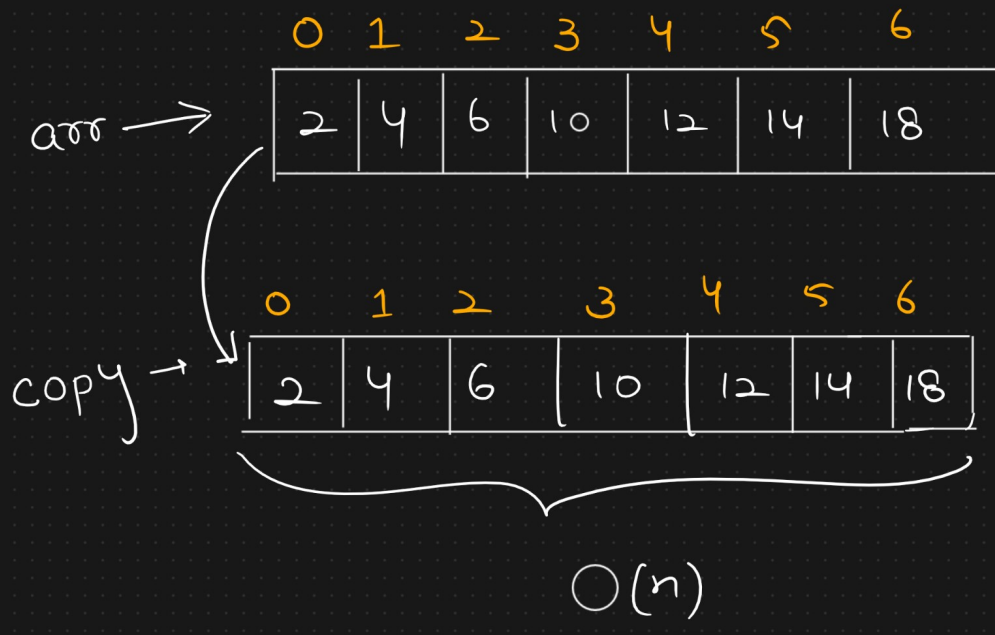
↳ space to execute your code
(Extra space)

sorting algorithms

variable
 $O(1)$

array
to store
output value
 $O(n)$

space complexity copy all the elements from arr to copy MergeSort



Objective

- ↳ Lower Time & space complexity (Ideal)
- ↳ Time — always on priority

Code 1 ✓

Time ↓↓

Space ↓↓

Code 2

Time ↓↓

space ↑↑

function
name
↓

$n = 5$

$f(n)$:

if ($n \leq 0$):

return 0

return $n + \underline{f(n-1)}$

Recursion

function
name

to store
all function
Recursion calls

Stack

5	$f(5)$
4	$f(4)$
3	$f(3)$
2	$f(2)$
1	$f(1)$
0	$f(0)$

$n = 5$

$5 + \underline{f(4)}$

$4 + \underline{f(3)}$

$3 + \underline{f(2)}$

$2 + \underline{f(1)}$

$1 + \underline{f(0)}$